

REMARKS

Applicant thanks the Examiner for acknowledging receipt of Applicants' foreign priority document that has been submitted pursuant to 35 U.S.C. §119.

Applicant respectfully requests reconsideration of the prior art rejections set forth by the Examiner under 35 U.S.C. §§ 102 and 103. Applicant submits that the prior art references of record, whether considered alone, or in combination, fail to either teach or suggest Applicants' presently claimed invention. More specifically, Applicants claimed invention is directed to new and improved structures and techniques for reading out signal charges from an imaging device. More specifically, Applicants claimed invention is directed to providing the capability of reading out image information from an imaging device at multiple speeds and operating resolutions. For example, as described in the specification, such a camera may be used to provide high resolution photographic image data as well as lower resolution view finder data, for example. Applicant has disclosed new systems and techniques for selectively mixing and reading out the image information in order to achieve higher speeds operation at lower resolution. The prior art of record does not teach or suggest this advance. In particular, the primary reference upon which the examiner relies in rejecting the claims is merely directed to an all-pixel reading image sensor or a non-interlaced output image sensor in which an interlaced signal can be selectively output without the use of a frame memory as an external circuit. This is directed to significantly different technology than that which was described in the instant application. More specifically, as described in the summary of the inventions section of the primary reference as described therein, an all-

pixel reading image sensor is capable of providing either a non-interlaced output image information or an interlaced signal without the use of frame memory. There is no teaching or suggestion regarding the multiple resolution technique as now claimed.

Respectfully submitted,

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CLEAN VERSION OF CLAIMS

1. In a solid-state imaging device comprising a two-dimensional arrayed pixel provided with a photo-electric conversion unit for photo-electric converting an incident light to a signal charge and a vertical register for transferring said signal charge or a vertical register having a photo-electric conversion function for transferring a signal charge produced by photo-electric converting an incident light and a horizontal register for receiving and transferring said signal charge transferred by said vertical register, a method of driving a solid-state imaging device being characterized by comprising the steps of:

mixing signal charges of pixels distant from each other on one row transferred to said horizontal register from said vertical register within said horizontal register; and
transferring said mixed signal charge in the horizontal direction.

2. A method of driving a solid-state imaging device as claimed in claim 1, characterized in that after said signal charges of pixels distant from each other on said one row are separately transferred from said vertical register to said horizontal register and one signal charge is transferred to said horizontal register, said one signal charge is transferred within said horizontal register and the other signal charge is transferred to said horizontal register, in which said signal charges are mixed.

3. A method of driving a solid-state imaging device as claimed in claim 2, characterized in that when said signal charges of pixels distant from each other on said one row are transferred from said vertical register to said horizontal register, said signal charges are transferred at every said vertical register of adjacent predetermined column.

4. A method of driving a solid-state imaging device as claimed in claim 1, characterized in that said pixel has a color filter thereon and pixels distant from each other on said one row are same in color.

5. In a solid-state imaging element having a photo-electric conversion means for photo-electric converting an incident light to a signal charge and a vertical transferring means for transferring said signal charge in a vertical direction and a horizontal register for receiving and transferring said signal charge transferred by said vertical transferring means in a horizontal direction, a solid-state imaging device being characterized in that a transfer gate unit is provided between said vertical transferring means and said horizontal register, and transfer electrode of first and second phase, which form said transfer gate unit, are disposed alternately at every constant column of said vertical transferring means.

6. A camera comprising a solid-state imaging device which has a two-dimensional arrayed pixel provided with a photo-electric conversion unit for photo-electric converting an incident light to a signal charge and a vertical register for transferring said signal charge or a vertical register having a photo-electric conversion function for transferring a signal charge produced and a horizontal register for receiving and transferring said signal charge transferred by said vertical register, a first mode in which signal charge of pixels distant from each other on one row and to be transferred from said vertical register to said horizontal register are mixed within said horizontal register, said mixed signal charge is transferred in a horizontal direction and output, and a second mode in which said register charges are separately transferred in a horizontal direction as a signal charge of each pixel without being mixed within said horizontal register, said first and second modes being switchable.

7. A camera as claimed in claim 6, wherein said first mode is such that said signal charges of pixels distant from each other on one row are transferred separately from said vertical register to said horizontal register, after one signal charge is transferred to said horizontal register, it is transferred within said horizontal register, the other signal charge is transferred to said horizontal register, and said signal charges are mixed.

8. A camera as claimed in claim 7, wherein in said first mode, when said signal charges of pixels distant from each other on said one row are transferred from said vertical register to said horizontal register, said signal charges are transferred at every vertical register of adjacent constant columns.

9. A camera as claimed in claim 6, wherein said pixel has a color filter thereon and pixels distant from each other on said one row are same in color.

10. A camera as claimed in claim 6, wherein said solid-state imaging device has a transfer gate unit between said vertical register and said horizontal register and transfer electrodes of first and second phases, which form said transfer gate unit, are alternately disposed at every constant column of said vertical register.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail on May 6, 2003 in an envelope addressed to:

**Mail Stop Fee Amendment
Commissioner For Patents
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